

Simplifying Rational Expressions Exercise

Simplify the following rational expressions. If possible, state any restrictions on the expressions.

1. $\frac{24x^2y^3}{16x^3y}$

2. $\frac{9y^2 - 121}{12y + 44}$

3. $\frac{14a^3bc}{-91abc^4}$

4. $\frac{c - 10}{10 - c}$

5. $\frac{-k + 9}{3k - 27}$

6. $\frac{6x - 2y}{2y - 6x}$

$$7. \quad \frac{d^3 + 4d^2}{d^2}$$

$$8. \quad \frac{3y + 2y}{5}$$

$$9. \quad \frac{4bc + 2ac}{8bd + 4ad}$$

$$10. \quad \frac{a^2 + 3a + 2}{a^2 + a - 2}$$

$$11. \quad \frac{b^2 + 5b}{3b + 15}$$

$$12. \quad \frac{6x^2 + 4x - 10}{3x^2 + 2x - 5}$$

13. $\frac{4g^2 - 1}{4g^2 - 4g + 1}$

14. $\frac{3x^2 - 48}{x^2 + x - 12}$

15. $\frac{y^2 + 7y}{3y + 21}$

16. $\frac{3r - 12}{36 - 9r}$

17. $\frac{f^2 - 14f + 49}{49 - f^2}$

ANSWER KEY:

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|-----|------------------------|--|-----|--------------------|----------------|
| 1. | $\frac{3y^2}{2x}$ | $x, y \neq 0$ | 16. | $-\frac{1}{3}$ | $r \neq 4$ |
| 2. | $\frac{3y-11}{4}$ | $y \neq \frac{-11}{3}$ | 17. | $-\frac{f-7}{f+7}$ | $f \neq -7, 7$ |
| 3. | $\frac{-2a^2}{13c^3}$ | $a, b, c \neq 0$ | | | |
| 4. | -1 | $c \neq 10$ | | | |
| 5. | $-\frac{1}{3}$ | $k \neq 9$ | | | |
| 6. | -1 | $x \neq \frac{1}{3}y$ or $y \neq 3x$ | | | |
| 7. | $d+4$ | $d \neq 0$ | | | |
| 8. | y | none | | | |
| 9. | $\frac{c}{2d}$ | $d \neq 0, a \neq -2b$ or $b \neq -\frac{1}{2}a$ | | | |
| 10. | $\frac{a+1}{a-1}$ | $a \neq -2, 1$ | | | |
| 11. | $\frac{b}{3}$ | $b \neq -5$ | | | |
| 12. | 2 | $x \neq -\frac{5}{3}, 1$ | | | |
| 13. | $\frac{2g+1}{2g-1}$ | $g \neq \frac{1}{2}$ | | | |
| 14. | $\frac{3(x-4)}{(x-3)}$ | $g \neq -4, 3$ | | | |
| 15. | $\frac{y}{3}$ | $y \neq -7$ | | | |